Table. Procedural outcomes of retrograde CTO PCI

Outcome	Pooled rate (95% confidence intervals)
Death	0.7% (0.5%-1.2%)
Urgent CABG	0.7% (0.4%-1.2%)
Tamponade	1.4% (1.0%-2.2%)
Collateral perforation	6.9% (4.6%-10.4%)
Coronary perforation	4.3% (1.2%-15.4%)
Donor vessel dissection	2% (0.9%-4.5%)
Stroke	0.5% (0.2%-1.0%)
MI	3.1% (0.2%-5.0%)
Q Wave MI	0.6% (0.4%-1.1%)
Vascular access complications	2% (0.9%-4.5%)
Contrast nephropathy	1.8% (0.8%-3.7%)
Wire fracture and equipment entrapment	1.2% (0.6%-2.5%)
Overall major adverse cardiac events (composite of death, urgent CABG, tamponade, Q-wave MI, and stroke)	2% (1.5%-2.7%)

TCT-831

Biodegradable-Polymer Drug-Eluting Stents versus Bare Metal Stents versus Durable-Polymer Drug-Eluting Stents : A Systematic Review and Bayesian Approach Network Meta-Analysis

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Background: To compare the safety and efficacy of biodegradable-polymer (BP) drug-eluting stents (DES), bare metal stents (BMS), and durable-polymer DES in patients undergoing coronary revascularization, we performed a systematic review of randomized controlled trials, and a multiple-treatments network meta-analysis using a Bayesian framework.
Methods: PubMed, Embase, Cochrane Controlled Trials Register databases, and relevant websites from the inception of each database to March 2013. Study stents included BMS, paclitaxel-eluting (PES), sirolimus-eluting (SES), Endeavor zotarolimus-eluting (ZES-E), cobalt-chromium everolimus-eluting (CoCr-EES), platinium-chromium everolimus-eluting (PtCr-EES), Resolute zotarolimus-eluting stents (ZES-R), and BP biolimus-eluting stents (BP-BES). Among 1,649 potentially relevant studies, 112 trials comprising 90,084 patients were finally selected. The principal safety endpoints were definite or probable stent thrombosis (ST) and definite ST defined according to the Academic Research Consortium within 1 year.
Results: BP-BES (OR, 0.56; 95% credible interval [CrI], 0.33-0.90), SES (OR, 0.53; 95% CrI, 0.38-0.73), CoCr-EES (OR, 0.34; 95% CrI, 0.23-0.52), and PtCr-EES (OR, 0.31; 95% CrI, 0.10-0.90) were superior to BMS in terms of definite or probable ST within 1 year. CoCr-EES demonstrated the lowest risk of ST of all stents and tended to reduce the risk of ST, at all times after stent implantation. CoCr-EES was associated with lower risk of definite ST within 1 year than BP-BES (OR, 0.41; 95% CrI, 0.21-0.76). SES was superior within 1 year but inferior after 1 year to BMS (OR, 1.82; 95% CrI, 1.05-3.13) regarding the risk of definite or probable ST. All DES reduced the need for repeat revascularization, and all but PES reduced the risk of myocardial infarction compared to BMS. For any comparison between study stents regarding all-cause death and cardiac death, there were no statistical differences.
Conclusions: Our study suggests that the optimal combination of stent alloy, geometry, strut thickness, polymer, and drug plays a more important role than the biodegradability of the polymer itself in determining the safety of DES.

TCT-832

Utility of Newer Oral Anticoagulants in High Risk Acute Coronary Syndromes: A Meta-analysis

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Background: Newer oral anticoagulants(OACs) have been evaluated in recent trials as adjunct to dual antiplatelet therapy (DAPT) in the management of high risk acute coronary syndromes(ACSs). In view of conflicting results of these trials, we decided to perform a meta-analysis of prospective randomized trials evaluating the therapeutic role of newer OACs in ACS patients.
Methods: We performed a MEDLINE search using all possible combinations of keywords "factor Xa inhibitor", "direct thrombin inhibitor(DTI)" or "newer anticoagulant" with keywords "acute coronary syndrome", "non-ST elevation myocardial infarction" or "ST-elevation myocardial infarction". All abstracts retrieved using search results were reviewed in detail to identify randomized trials reporting incidence of death, myocardial infarction, major bleeding & MACE in patients randomized to placebo &, oral factor Xa or DTI in ACS patients. Studies that did not use DAPT were excluded. Meta-analysis was performed following the PRISMA statement. Random-effects model using inverse-variance weighting was used for the primary analyses. The main measure of association was odds ratio & 95% CI. Study quality, heterogeneity & publication bias was evaluated using standard methods. MACE & bleeding were also separately analyzed in patients on low doses of trial drugs.
Results: A total of 91 abstracts were reviewed. Data from 2 phase III & 4 phase II randomized controlled trials that met inclusion criteria was used in final analysis. A total of 30,774 patients were included in the primary analysis. There was no decrease in all-cause mortality[odds ratio:0.9 (0.74-1.1; p:0.32)] but a significant decrease in MACE[0.87(0.76-0.98);p=0.03] & recurrent MI[0.87(0.76-0.99; p=0.04)]. There was a significant increase in major bleeding [3.1(2.3-4.1);p<0.001]. Data on outcomes for low dose was available in 14673 patients across 5 studies & was consistent with those of the primary analysis with a similar decrease in MACE[0.85(0.74-0.98);p=0.02] & increase in major bleeding[3.35(2.1-5.4);p<0.001].
Conclusions: Use of newer OACs as adjunct to DAPT in patients with high risk ACS reduces risk of recurrent MI & MACE at the risk of threefold increase in major bleeding.

TCT-833

Meta-analysis of Long Term Outcomes of Intravascular Ultrasound versus Angiographic-Guided Percutaneous Coronary Intervention of Bifurcation Lesions

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Background: Bifurcation lesions are common, and bifurcation PCI is associated with worse outcomes, including target lesion failure and stent thrombosis (ST). There is limited data on whether IVUS guidance can improve outcomes compared to angiographic guidance in bifurcation PCI.
Methods: We conducted a meta-analysis of studies that reported long-term outcomes in IVUS-guided vs. angiography-guided bifurcation PCI.
Results: Five observational studies with 7,123 patients were included. Mean follow-up time was 28.1 months for IVUS-guided PCI, and 25.7 months for angiography-guided PCI. Drug eluting stents were used in most cases (80.1%), and left main PCI was uncommon (9.3%). Patients undergoing IVUS-guided PCI were more commonly treated with a two stent technique compared to angiography-guided PCI (43.2% vs. 35.0%), had a larger main vessel mean stent diameter (standardized mean difference [SMD] 0.29 mm, p <0.001), and larger side branch stent diameters (SMD 0.38mm, p <0.001). IVUS-guided PCI was associated with a significant reduction in the composite of death, myocardial infarction (MI), and ST (6.9% vs. 12.0%, odds ratio [OR] 0.137, 95% confidence interval 0.023-0.825, p = 0.030, Figure). IVUS-guided PCI was also associated with a significant reduction in death (OR 0.519, p<0.001) and stent thrombosis (OR 0.218, p=0.034) compared to angiography-guided PCI.

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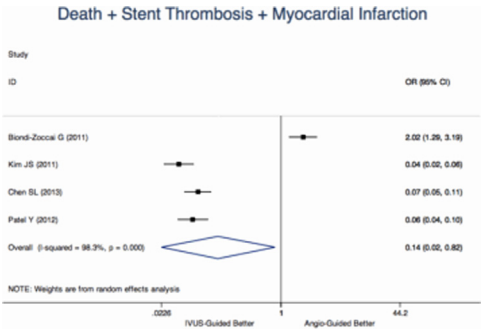

Conclusions: IVUS-guided bifurcation PCI may improve long term outcomes compared to angiography-guided bifurcation PCI. Randomized data are needed to confirm the findings of this meta-analysis.

TCT-834

No differences in clinical efficacy and safety between biodegradable polymer and durable polymer drug-eluting stents for percutaneous coronary intervention: insights from a meta-analysis of randomized controlled trials

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Background: With the recent availability of randomized evidence in the era of biocompatible drug-eluting stents (DES), we systematically reviewed the latest data on the efficacy and safety of biodegradable polymer DES versus durable polymer DES for percutaneous coronary intervention (PCI).
Methods: MEDLINE, EMBASE and the Cochrane database were searched in May 2013 for eligible randomized controlled trials (RCTs). Primary outcomes were mortality, myocardial infarction (MI), stent thrombosis, target lesion revascularization (TLR) and target vessel revascularization (TVR). Secondary outcomes were late lumen loss (LLL), minimal lumen diameter (MLD), diameter stenosis and binary restenosis.
Results: We included 20 studies (n=20,021). A total of 11,045 (55.2%) participants were randomized to biodegradable polymer DES and 8,976 (44.8%) to durable polymer DES. No significant differences were observed in the analyses of all-cause mortality (odds ratio (OR) 0.95, 95% confidence interval (CI) 0.81 to 1.12, p=0.54), cardiac mortality (OR 0.95, 95% CI 0.77 to 1.17, p=0.62), MI (OR 1.08, 95% CI 0.91 to 1.27, p=0.37), stent thrombosis (OR 0.89, 95% CI 0.70 to 1.14, p=0.36), TLR (OR 0.88, 95% CI 0.71 to 1.10, p=0.26) or TVR (OR 1.05, 95% CI 0.85 to 1.29, p=0.65). Biodegradable polymer DES were associated with significant improvement in most angiographic outcomes (in-stent LLL: mean difference (MD) -0.05, 95% CI -0.09 to -0.02, p=0.004; in-segment LLL: MD -0.04, 95% CI -0.06 to -0.01, p=0.004; in-stent MLD: MD 0.08, 95% CI 0.03 to 0.14, p=0.002; in-segment MLD: MD 0.06, 95% CI 0.02 to 0.10, p=0.001; in-stent diameter stenosis: MD -2.27, 95% CI -4.02 to -0.52, p=0.01; in-segment diameter stenosis: MD -1.97, 95% CI -3.14 to -0.81, p=0.0009) except for binary restenosis (in-stent: OR 0.68, 95% CI 0.25 to 1.83, p=0.44; in-segment: OR 0.83, 95% CI 0.50 to 1.39, p=0.49).
Conclusions: Biodegradable polymer DES significantly improved angiographic outcomes, with similar clinical safety and efficacy profiles as those by durable polymer DES. Long-term follow-up data from large-scale randomized studies are warranted to further establish the effects of biodegradable polymer DES for PCI.

TCT-835

Sodium bicarbonate versus normal saline hydration for mortality: a meta-analysis of randomized controlled trials

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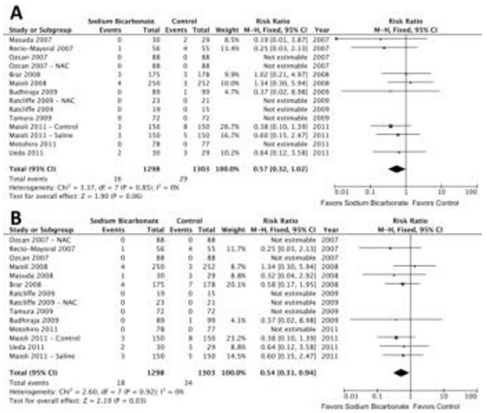
Background: Perioperative infusion of sodium bicarbonate (NaHCO3) has been shown to reduce the risk of contrast-induced nephropathy (CIN). However, it is currently not known the effect NaHCO3 may have on short and long-term mortality. The objective of this research was to conduct a meta-analysis to determine whether NaHCO3 is associated with a reduction in mortality.
Methods: We searched MEDLINE, EMBASE, and references for published randomized controlled trials (RCTs) comparing hydration with NaHCO3 versus normal saline (NS) for mortality at 30-days and 1-year following coronary angiography (index procedure). Point estimates were extracted as relative risks (RRs) and 95% confidence intervals (CIs) and combined for meta-analysis using a fixed-effect model.
Results: Eleven RCTs, including 2634 participants (NaHCO3=1298; NS=1303) met eligibility criteria. Eight contributed data to summary estimates for 30-day (Fig. 1A) and 1-year all-cause mortality (Fig. 1B). At 30-days, a total of 16 and 29 deaths occurred in NaHCO3 and control arms, respectively (1.2% vs 2.2%; RR, 0.57; 95% CI, 0.32-1.02; p=0.06) compared to a total of 18 and 34 deaths at 1-year (1.4% vs 2.6%; RR, 0.54; 95% CI, 0.31-0.94; p=0.03). There was no observed heterogeneity for either outcome (p=0.85 and p=0.92), nor any evidence of reporting bias.



Conclusions: Sodium bicarbonate has an important clinical impact in reducing mortality following coronary angiography.

TCT-836

The impact of biodegradable versus durable polymer drug-eluting stents on stent thrombosis in patients with coronary artery disease: a meta-analysis of 15 randomized trials

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Background: DES with biodegradable polymers have been developed in an attempt to improve clinical outcomes. However, the impact of biodegradable polymers on clinical events and ST remains controversial.
Methods: We searched Medline, the Cochrane Library and other internet sources, without language or date restrictions for articles comparing clinical outcomes between biodegradable polymer DES and durable polymer DES. Safety endpoints were ST (definite, definite/probable), mortality, and myocardial infarction (MI). Efficacy endpoints were major adverse cardiac event (MACE) and target lesion revascularization (TLR).
Results: We identified 15 randomized controlled trials (n=17,068) with a weighted mean follow-up of 20.6 months. Compared with durable polymer DES, there was a trend towards low incidence of definite/probable ST in biodegradable polymer DES group, but this difference was not statistically significant (relative risk [RR]: 0.83; 95% confidence interval [CI]: 0.62-1.11; p=0.22). Biodegradable polymer DES had similar rates of definite ST (RR: 0.94; 95% CI: 0.66-1.33; p=0.72), mortality (RR: 0.94; 95% CI: 0.82-1.09; p=0.43), MI (RR: 1.08; 95% CI: 0.92-1.26; p=0.35), MACE (RR: 0.99; 95% CI: 0.91-1.09; p=0.85), and TLR (RR: 0.94; 95% CI: 0.83-1.06; p=0.30) compared with durable polymer DES. Based on the stratified analysis of included trials, the treatment effect on definite ST was opposite by different follow-up times: ≤1 year favoring durable polymer DES, >1 year favoring biodegradable polymer DES.
Conclusions: Biodegradable polymer DES have similar safety and efficacy for treating patients with coronary artery disease compared with durable polymer DES. Further data with longer term follow-up are warranted to confirm the potential benefits of biodegradable polymer DES.